

Seguin (E. C.)

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Inhibitory Arrest of the Act of
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AND ITS

THERAPEUTICAL APPLICATIONS.

23.

BY

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LECTURER ON DISEASES OF THE NERVOUS SYSTEM AT THE COLLEGE OF PHYSICIANS
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IN the early summer of 1869, I discovered that sneezing could be arrested or prevented by forcibly rubbing the skin below and to either side of the nose. I at once communicated this fact to the editor of this Journal, and in my letter pointed out the inhibitory nature of the phenomenon; classing it with the arrest of the heart's action in Weber's experiment,* and with the arrest of spinal epilepsy by irritation of the great toe.† I was soon made aware that this simple means of stopping sternutation was known to many outside the profession, and that it had been formally recommended by Diday‡ in 1843. More recent researches have shown me that Haller§ (perhaps Bartholinus before him ||), and Marshall Hall¶ had called attention to the possibility of arresting sneezing by irritating the skin between the nose and the angle of the eye (Haller), or by rubbing the end of the nose (M. Hall).

I venture to treat formally of this small matter, because I was perhaps the first to call attention to the correct explanation of the arrest, and because I have long had in mind certain therapeutical applications of this method. Before proceeding to state the circumstances which may indicate the arrest of sneezing, a few words about

* See Brown-Séquard, Archives of Scient. and Pract. Medicine, No. 1, Jan. 1873, p. 89.

† Brown-Séquard, Archives de phys. normale et pathologique, I. p. 157, 1868.

‡ Diday, Note sur un moyen simple de prévenir ou d'arrêter la toux dans certaines maladies. Gazette Méd. de Paris, 1843, pp. 103-106.

§ Haller, Elementa physiologiæ, t. III, p. 304. Lausanæ, 1766.

|| Th. Bartholinus, cited by Haller *in op. cit.* [passage not found in B.'s works.]

¶ Marshall Hall, Diseases and Derangements of the Nervous System, p. 99. Lond., 1841.

physiological and pathological sternutation may not be out of place.

1st. What is the physiology of sneezing? A most distinguished physiologist* has said that "sneezing is a sudden and violent contraction of the expiratory muscles consequent upon the closure of the upper part of the air passages. * * * * The diaphragm, contrarily to what is taught by many ancient and modern writers, takes no part in the act of sneezing; it is not an expiratory muscle, and acts only in the deep inspiration which precedes sneezing." Austin Flint, jr.† defines sneezing as "a convulsive action of the expiratory muscles succeeding a deep inspiration; the air being violently expelled, with a characteristic sound, through the nares." Carpenter‡ states that the act of sneezing is accomplished by a violent expiratory effort. Haller§ speaks of sternutation as consisting of a spasm of the diaphragm, in the first place, causing a deep inspiration, this being followed by spasmodic action of the muscles of expiration. Morgagni|| also considers the act of sneezing as caused principally, if not wholly, by spasmodic action of the diaphragm. Many writers mention the associated movements of the face, head, neck and limbs, which every one must have observed in his own person while sneezing. After the deep inspiration, the air is held in the chest by closure of the glottis, then escapes principally through the nose, the isthmus of the fauces being closed. This is the typical sneeze; but custom has brought about the discharge of a part of the air through the mouth, in order to prevent the very result for which the act of sneezing seems fitted, viz., the expulsion of mucus from the nostrils. I desire particularly to call attention to the Hallerian view of the physiology of the act. It appears to me that the deep inspiration which we take previous to sneezing is really spasmodic, and due to a morbid (unusual) irritation of the centre of origin of the phrenic nerves. In support of this ancient view we have the fact, that in cases of excessively prolonged sneezing (Brown-Séguard's and Mosler's cases) the pain complained of is located in the neighborhood of the diaphragmatic insertion. Could we prevent this first or preliminary act, we should always be able, it strikes me, to avoid sneezing.

The cause of physiological sneezing usually consists in an irritation of the nasal branches of the trifacial nerve by congestion, dust, odors, mechanical or chemical contacts. In many persons the spasm is

* J. Müller, *Manuel de physiologie*, (ed. Littré), t. I. p. 278. Paris, 1851.

† *The Physiology of Man*, vol. I, p. 395. New York, 1866.

‡ *Principles of Human Physiology*, p. 333. Seventh edition. Lond., 1869.

§ Albertus Haller, *Elementa physiologiæ*, loco cit.

|| Morgagni, *De sedibus et causis morb.* English ed., by Benjamin Alexander, M.D. Vol. I, p. 341, Letter XIV, art. 26, 27. London, 1769.

easily brought about by the action of light upon the conjunctivæ (optic nerve also?). It has been stated that the application of a spirituous liquor to the anterior part of the palate may act as an excitant.* I have been informed by a well-known medical man that, when a boy at college, he was in the habit of exciting sneezing in his own person by scratching a certain spot upon his head, near the vertex, and a little to one side of the median line; thereby causing frequent disturbances in the class-room. Sneezing is spoken of by older writers as preceding attacks of epilepsy,† and one author‡ states that it is very commonly observed just before sexual congress. Romberg§ states that one of the listeners to his lectures had informed him that he was obliged to sneeze whenever a salacious thought suggested itself to his mind.

2d. Under what circumstances can sneezing itself merit the name of a disease; when does the act become pathological? The older writers on medicine appear to have had their attention directed to this matter. Sauvages,|| who recognizes six varieties of sternutation, says that epidemic sternutation had before his day proved so violent as to cause death. He does not give any reference to his authority for this statement, and I have been at some trouble to trace the report, and have found it attributed to an author named Polydorus Virgilius,¶ whose work I have been unable to procure. Morgagni,** Bonetus,†† Albrecht,‡‡ Fabricius Hildanus,§§ and Lancisi|||| are quoted as reciting fatal cases. Morgagni's case is a good one; an autopsy yielding negative results having been made. Bonetus does not speak from personal experience, but relies on the statement of a supposed eye-witness, Famianus Strada; the subject sneezed twenty-four times, and expired during the twenty-fifth sternutation, it is supposed, from rupture of the vessels of the brain. Albrecht's case is circumstantially related, and may be accepted. On reading Lancisi's work I found that he referred to the same case as Bonetus. We are, therefore, willing to admit the existence of only three fatal cases, one of these being imperfectly recorded. Hildanus's work I have not been able to consult. Haller¶¶ observed a case in which a deviation up-

* De Lens, cited by Rullier, Dict. des sciences médicales, t. LIII, p. 578.

† Stalpart van der Wiel, Obs. rarior. med.—anat.—chir. Lugd. Batav., 1688.

‡ Amatus Lusitanus, cited by van der Wiel, op. cit.

§ Romberg, Nervous Diseases of Man, vol. I, p. 349, Syd. Soc. Trans. Lond., 1853.

|| Sauvages, Nosologie médicale, t. II, pp. 50-52. Paris, 1771.

¶ Polydorus Virgilius, de invent. rerum. Lib. 6, cap. 2.

** Morgagni, op. cit. Letter XIV, art. 27.

†† Bonetus, Sepulchretum anat. vol. I. lib. 1. sect. xx. obs. xvii. Genevæ, 1700.

‡‡ Albrecht, in Ephem. naturæ curios. Dec. II. obs. xii. p. 38, 1687.

§§ Fabricius Hildanus. Cent. I. obs. 24.

|||| Lancisi, De subitaneis mortibus, p. 45. Romæ, 1709.

¶¶ Haller, op. cit.

ward of the eyeball was produced by violent sneezing. Erasmus Darwin* places sternutation in his Class II. (diseases of sensation), Ordo I. (increased sensation), and Genus I. (increased action of the muscles); together with diseases which he considers allied species, such as asthma, singultus, tenesmus, parturition(!) etc. Romberg† records an instance of sneezing extending over a period of four years; and the case of a woman who was seized with violent sternutation whenever conception occurred—the fit of sneezing usually taking place in the morning. Sir Benjamin Brodie‡ saw two cases of very severe and prolonged sneezing, in both of which profuse secretion of serous fluid took place from the nostrils. Among recent writers upon diseases of the nervous system Handfield Jones§ and Eulenburg|| have considered the subject in a systematic way, and the former author has advanced the view that sternutation may sometimes be due to a central cause. Dr. Peter Young¶ communicated a case of prolonged sneezing to the Obstetrical Society of Edinburgh occurring during the middle term of pregnancy, and ultimately causing abortion. On becoming pregnant a second time the woman experienced similar fits of sneezing, beginning, as before, about the fourth month of gestation. A remarkable case has been described by Mosler,** as occurring in a young girl. The patient, previously rendered anæmic by various causes, became affected with an acute inflammation of the meatus and deeper parts of the ear, and shortly afterward began to sneeze in very frequent paroxysms. The frequently recurring spasm was very violent, and soon reduced the patient to a state of alarming prostration. For three days she was able to take but very little food, and obtained no rest; she became aphonic, the sides of the thorax corresponding with the diaphragmatic insertion became the seat of extreme pain, the pulse attained a rate of more than 120 beats per minute, the face was flushed, and the nasal and buccal mucous membranes dry. The ear was swollen and tender, and there existed much pain in the whole of the same side of the face. A warm bath, together with cold affusion to the head and spine, and two doses of $\frac{1}{4}$ gr. morphia put an end to the threatening disorder, after it had continued eighty hours, and after the patient had sneezed at the least estimate fifty thousand times. A severe case of sneezing lasted over a week, and accompanying a first men-

* Darwin. *Zoonomia*, vol. II, p. 222, Am. ed. Phil. 1797.

† *Loco cit.*

‡ *Works*, Vol. III. p. 173. London, 1865.

§ C. Handfield Jones. *Functional Nervous Disorders*, pp. 644-46. Lond., 1870.

|| A. Eulenburg. *Lehrbuch der functionellen Nervenkrankheiten*, pp. 672-3. Berlin, 1871.

¶ *Proceedings of Edinburgh Obstetrical Soc. in Edinb. Medical Journal*. Nov. 1861, p. 492.

** Mosler, *Virchow's Archiv*, Bd. xiv., s. 557-565.

strual period, is reported by Dr. Trautmann, Sr.* Cases of severe sneezing are also recorded by many of the older authors, among whom may be named Delius,† Lanzoni,‡ Schubart,§ the two Franks.¶ In the case of Delius the sternutation was allied with hiccough in the course of a malignant fever. Finally Dr. Brown-Séquard has told me of a case observed by him in which violent sneezing occurred during the progress of an inflammatory affection of one-half of the medulla oblongata, diagnosed during life, and verified by a post-mortem examination. In this patient, the pain caused by the spasm was about the base of the thorax, on both sides.

The causes of pathological sneezing may be classified into local (nasal), central, and peripheral. The local cause may be an inflammation of the mucous membrane of the nose, vibriones irritating the mucous membrane (in hay-fever, Helmholtz, ¶) the presence of a foreign body in the nostrils, (snuff, various other sternutatories, the larvæ of insects, ** etc.). Concerning the causes of sneezing produced by morbid states of the nervous centres, we really know nothing. Perhaps many of the hysterical cases may be due to this cause. The causes acting from a distance are numerous. Uterine,†† intestinal,‡‡ pulmonary (asthma and whooping-cough), conjunctival or retinal irritation may produce the spasm.

In one of Romberg's cases the§§ third branch of the trigeminus was found diseased before its exit from the skull. In Mosler's ||| extraordinary case, inflammation of the ear, causing irritation of branches of the trigeminus, was undoubtedly the cause of the spasm. Mosler attempted to produce sneezing in dogs by direct irritation of the auricular filaments of the fifth pair, but without success.

Treatment the most varied and extraordinary has been tried for the relief of morbid sneezing. Bartholinus, quoted by Haller, seems to have been the first to suggest irritation of a sensitive nerve of the face, between the angle of the eye and the nose, as a means of arresting the spasm. Haller speaks of the plan as if he had tried it himself. Morbid sternutation has been cured by the use of snuff, ¶¶

* Schmidt's Jahrb. Bd. VIII. p. 50, from Summarium, Bd. X. Hft. 3.

† Delius, in Acta Phys.—Med. Acad. Cæsareæ-Leopold-Carol. Vol. VIII. obs. cviii. p. 380, 1748.

‡ Lanzoni, in idem. Vol. I. obs. lxi. p. 117, 1727.

§ Schubart, in Ephem. naturæ curios. Dec. I. obs. cxxxviii. p. 211, 1672.

¶ J. Frank, Præceps medicæ universæ precepta. Vol. II. p. 831. Cited by Romberg, op. cit.

¶¶ Cited by Eulenburg, op. cit. p. 672.

** Carpi in Harless Jahrbücher, Bd. I. Hft. I. Cited by J. Frank, Præceps Medicæ Universæ precepta, vol II. pars I. p. 965.

†† Dr. Peter Young Loco cit.

‡‡ Dr. Little, in Obstetrical Soc. of Edinburgh, Edinb. Med. Journal, Nov., 1861, p. 493.

§§ Loco cit. p. 347.

|| Loco cit.

¶¶ Bauwens, cited in Med. Chir. Review, 1836, vol. II. p. 245.

and Darwin * asserts that, "when it is exerted to excess it may be cured by snuffing starch up the nostrils." Dr. Gairdner † strongly advocated the use of blisters to the nape of the neck, not only for the arrest of the spasm under consideration, but, also, for the cure of convulsive cough and hiccough. This means is perfectly analogous to that proposed by Bartholinus, Haller, Diday, and the author: an irritation varying in intensity being transmitted to the centres in the spinal axis which are about to furnish the motor impulse for the spasm, the activity of these motor centres is inhibited or arrested by the new (more intense?) irritation. Romberg ‡ advises the use of emetics. Eulenburg § recommends emetics, skin irritation (mustard), such tonics as iron, arsenic and quinia. An English bishop, subject to very harassing fits of sneezing, is mentioned by Watson || as having found an effectual remedy in dipping his head into cold water. Mosler controlled the case which he reports only by a combination of the warm body bath, and cold affusion to the head and back of neck; a means which produced syncope in his weakened patient.

A number of authors insist upon the necessity of removing the peripheral cause, irritation of uterus, etc., if any exist. It would seem as if these remedial measures might be properly classed under four heads. In the first place, means tending to allay the irritation of the nostrils (starch); in the second place, remedies which produce, or tend to produce, syncope, and its attendant lowering of nervous irritability (emetics, warm baths, narcotics); in the third place, medicines which, like iron, quinia and arsenic, diminish morbid irritability by improving the nutrition of the nervous centres; and fourthly, inhibitory means, such as cold to the head and neck, mustard and cantharidal irritation to the neck, inhalation of iodine (Eulenburg), and pressure upon the branches of distribution of the infra-maxillary nerve. This last measure is the one which has surely arrested or prevented physiological sneezing in my experience, and in that of many persons to whom I have recommended it. The upper lip is very convenient for this purpose, and the moderately painful impression required is easily excited there by the pressure of the side of the index-finger. Whether this simple means would succeed in cases of pathological sternutation I will not venture to predict. Should it fail, I would suggest as producing a more intense irritation of the same nerves, the use of faradization of the skin of the same parts

* Darwin, op. cit.

† J. Gairdner, on Anomalous Affections of the Respiratory Organs. Edinb. Med. and Surg. J. 11. p. 77. 1840.

‡ Romberg, op. cit.

§ Eulenburg, op. cit. p. 673.

|| Watson, Lectures on Physic. Am. ed. p. 110. Phil. 1858.

(lips and cheeks near nose). The wire brush electrode should be used in connection with the secondary current, the skin to be thoroughly dried, and even covered with starch-powder. It seems to me rational to anticipate good results, also, from the faradization of the nape of the neck in morbid sneezing, hiccough, or convulsive-cough; after any existing peripheral cause shall have been removed. These irritations of sensitive nerves (pressure, faradic-current) transmitted centripetally by the filaments of the second branch of the fifth pair, or by those of the upper cervical nerves, exert an inhibitory influence upon the motor centres which are about to become active, viz., the spinal centre of the phrenic nerves in the first place, and, secondly, the extensive kinetic tract which is connected with the muscles of expiration.

Various therapeutical applications of this method suggested themselves to me at the time.

a. Certain applications to medicine. In various forms of internal hæmorrhage, especially that occurring in the nasal and pulmonary tract, it is highly desirable to avoid the jar produced by sneezing. The same indication exists in the course of development of those aneurisms which fall to the care of the physician; for some days after the reduction of prolapsed rectum or uterus; or in the advanced stage of hepatic abscess, or hydatid disease. A minor use to which this inhibitory action may be put, is the prevention of such pains as are produced by shaking of the body, or by deep inspiration.

b. Certain applications to surgery. Sneezing must be avoided after many plastic operations, and operations upon the vagina, uterus, or abdominal walls. After many cutting operations about the eye, absolute rest is highly desirable; and is even more required in the cure of cleft-palate. Of course, under many circumstances, the arrest of hæmorrhage may be made surer by the avoidance of sternutation.

The reader may, perhaps, pardon me if I add a non-medical paragraph. The custom of invoking a blessing upon persons who sneeze is a most interesting one. Several of the old medical authors above referred to state that the custom dates from the time of a severe epidemic (in which sneezing was a bad sign) during the Pontificate of Gregory the Great. Brand,* however, and the author of an article in Rees's Cyclopædia,† state that the phrase "God bless you," as addressed to persons having sneezed, is much more ancient, being old in the days of Aristotle. The Greeks appear to have traced it back to the mythical days of Prometheus, who is reported to have blessed his

* Brand; *Observations on Popular Antiquities*, Vol. III, pp. 119—127. Lond. 1849.

† Rees' *Cyclopædia*, Vol. XXXIV, art. Sneezing.

man of clay when he sneezed.* In Brand, the rabbinical account of the origin of the phrase is given as originating in the alleged fact that it was only through Jacob's struggle with the Angel that sneezing ceased to be an act fatal to man. In many countries sneezing has been the subject of congratulations, and of hopeful augury. In Mesopotamia and some African towns, the populace are reported to have shouted when their monarchs sneezed.

* Alex. Ross' Appendix to Arcana Microcosmi, cited by Brand.

It would be unjust not to state that Diday (op. cit.) had suggested practical applications of his method, and that I became aware of this fact only after having matured the original parts of this article.

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- *Rullier. Article Sternutation, in Dict. des Sciences méd. t. LII. p. 577, 1821.
 Merlet. Est ne sternutatio naturalis actio? Paris, 1654.
 Schneider. De osse cribriformi, etc. Wittemb. 1656.
 Schoock. De sternutatione: Amst., 1664.
 Alberti. Diss. de sternutatione. Lips. 1671.
 Birnbaum. Diss. de sternutatione, Lips., 1672.
 Forestus. Diss. de sternutatione, Argent. 1688.
 Forestus. Diss. de sternutatione, Argent. 1688.
 Hoffmann. (Maurice) Diss. ptarmographia physiologico-pathologico-therapeutica. Alt., 1710.
 Kyselius. Diss. de stern. præternaturali. Erf. 1716.
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 Unzer. Diss. de sternut. Hal. 1748.
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 Faselius. Diss. de causis sternutationis ejusque effectibus. Jenau, 1765.
 Sidren. Diss. de sternut. Upsal. 1779.
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 Rega H. J. De sympathia, p. 240, Harlemi, 1721.

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